CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER 93-158

NPDES PERMIT NO. CA0029971

WASTE DISCHARGE REQUIREMENTS FOR:

LYNCH CIRCUITS, INC.
AND
SILICONIX, INC.
1140 WEST EVELYN AVENUE FACILITY
SUNNYVALE
SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board) finds that:

Site Description

1. Lynch Circuits, Inc. is located at 1140 West Evelyn Avenue, Sunnyvale, California (hereinafter called Site). Siliconix, Inc., was a former occupant. Lynch Circuits, Inc. and Siliconix, Inc. shall hereinafter be referred to as the Dischargers.

Regulatory Status

2. Lynch Circuits, Inc. has applied to discharge treated groundwater for its site cleanup with a new NPDES permit. Lynch Circuits, Inc. and Siliconix, Inc. are considered to be dischargers because of their ownership, occupancy and use of the Site. Lynch Circuits, Inc, the current owner, operated the facility from 1977 to 1987, Siliconix, Inc., operated the Site from 1962 to 1970. During these times, releases of chemicals have occurred.

Enforcement History

3. The dischargers are currently under Site Cleanup Order (SCO) No. 89-115 adopted by the Board on June 21, 1989. Because of off site access delays, the dischargers requested SCO 89-115 be modified by splitting the site investigation task into two components for on-site and off-site pollutant characterization. Additional tasks and schedule modifications were also included which were the Interim Remedial Actions, Evaluation of Installed Remedial Actions, Feasibility Study, and Final Site Cleanup Implementation Report. This SCO amendment 90-090 was adopted on June 20, 1990. On February 20, 1991, SCO amendment 91-018 extended existing completion dates because of further access problems to off-site properties.

Site History

4. Reported chemical handling facilities at the Site include a former aboveground chemical treatment system, a former waste chemical storage area and an acid and trichloroethene (TCE) sump location. Soil and groundwater pollution existing near or under these handling facilities. Sampling values for TCE are up to 610 μg/l in the soil. In May 1993 TCE values

ranged from 260 μg/l to 7100 μg/l in the groundwater. Another pollutant found on-site in the groundwater was cis-1,2-dichloroethene ranging from 13 μg/l to 1800 μg/l.

Soil and Groundwater Contamination

5. Priority pollutant metals in groundwater have only been detected at low or non-detectable concentrations at or below the Board's Basin Plan for discharge to surface waters. Data are sufficient to conclude that metal concentrations are background, and to establish baseline levels for these metals, and that previous activities at the Site have not significantly impacted groundwater quality with respect to priority metals. The VOC sampling has established baseline levels.

The Interim Remedial Treatment Systems

6. The approved interim remedial actions

A. Ground Water and Soil Vapor Extraction

(i) ground water extraction from three A-zone extraction wells along the northern edge of the Site. Each well would produce approximately one-half gallon per minute. The estimated capture zone would extend 100 feet down gradient from the Site boundary.

(ii) There would be ground water extraction from one B-zone well located at the northern edge of the site. This well would produce approximately 15 gallons per minute.

(iii) Soil vapor extraction will be from five wells with a depth of about 45 feet located inside the building except for one well located near the outside wall to the south of the building. The flow rate would be about 60 cubic feet per minute from each well.

B. Treatment

The groundwater pollutants are TCE and cis-1,2-dichloroethene. Influent pH would be adjusted with in-line injection of acid. The ground water treatment system would consist of air stripping with vapor-phase granular activated carbon (GAC). The vapor treatment system would be commercially available GAC canisters. Spent carbon would be regenerated at an off site, licensed regeneration facility.

C. Disposal of Treated Ground Water

Irrigation, ground water recharge, discharge to the public operated treatment work (POTW), and surface waters discharge regulated by an NPDES permit were options considered by the discharger.

(i) The discharger may design five hundred feet of piping to facilitate an irrigation supply to the City of Mountain View for the center divide of the

Central Expressway. The City officials said they would not be interested until after the treatment system was in place. The expressway irrigation would use 3,000 gallons per day. The total treated average ground water flow for the Site is 20 gallons per minute or 28,800 gallons per day. The maximum flow will be 35 gallons per minute or 50,400 gallons per day. Treated flows are at least ten times the amount that could be reclaimed through expressway irrigation.

(ii) Reinjection of the treated effluent into the ground water with an infiltration gallery would be expensive, and the Santa Clara Valley Water District requires that the ground water extraction system be shown capable of capturing all infiltrated ground water. The extraction system is limited to the on-site area and may not be extensive enough for complete extraction.

(iii) Discharge to the POTW was considered. The City of Sunnyvale does not allow a discharge on a long term basis, and requires the renewal of an interim permit every six months.

(iv) The NPDES permit, will allow discharge to surface waters via a storm drain. Based on economics of these options, the discharger has proposed that the treated groundwater be discharged to surface waters. The proposed discharge will consist of the treated waste stream as permitted in this Order. The proposed discharge of the effluent stream will be to an on site storm drain tributary to the West Channel of the Santa Clara Flood Control Channel and South San Francisco Bay.

Basin Plan Requirements

7. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Region (Basin Plan) on December 17, 1986 and amended it on August 19, 1987, July 18, 1989, September 16, 1992, and October 21, 1992. This Order implements the water quality objectives for the Basin Plan.

8. The existing and potential beneficial uses of the surface water adjacent to and contiguous with West Channel, Santa Clara Flood Control Channel, Guadalupe Slough and South San Francisco Bay include:

   a. Contact and non-contact water recreation
   b. Wildlife habitat
   c. Preservation of rare and endangered species
   d. Estuarine habitat
   e. Navigation
   f. Ocean commercial and sport fishing
   g. Shellfish

9. The Basin Plan prohibits discharge of wastewater which has "particular characteristics of concern to beneficial uses" (a) "at any point in San Francisco Bay south of the Dumbarton Bridge" and (b) "at any point where the wastewater does not receive a minimum initial

dilution of at least 10:1 or into any nontidal water, dead end slough, similar confined water, or any immediate tributary thereof."

10. The Basin Plan allows for exceptions to the prohibitions referred to in the above when it can be demonstrated that a net environmental benefit can be derived as a result of the discharge.

11. Exceptions to the prohibitions referred to in the above are warranted for this discharge because the discharge is an integral part of a program to cleanup polluted groundwater and thereby produce an environmental benefit. Discharge of waste is a privilege, not a right. Authorization to discharge is conditioned upon the discharge complying with provisions of Division 7 of the California Water Code and any more stringent effluent limitations necessary to implement water quality control plans, to protect beneficial uses, and to prevent nuisance. Compliance with this Order should assure this and limit any potential adverse changes in water quality due to the discharge. Should studies indicate chronic effects not currently anticipated, the Board will review the requirements of this Order based upon the section for Receiving Water Limitations, C.1.e.

12. The Basin Plan prohibits discharge of "all conservative toxic and deleterious substances, above those levels which can be achieved by a program acceptable to the Board, to waters of the Basin." The discharger's groundwater extraction and treatment system and associated operation, maintenance, and monitoring plan constitutes an acceptable control program for minimizing the discharge of toxicants to waters of the State.

13. Effluent limitations and toxic effluent standards established pursuant to Sections 208(b), 301, 304, and 307 of the Federal Water Pollution Control Act and amendments thereto are applicable to the discharge.

14. Effluent limitations of this Order are based on the Basin Plan, State and U.S. Environmental Protection Agency (EPA) plans and policies, best available treatment economically available (BATEA), and best technical judgement. Also considered in the determination of effluent limits were the EPA Region IX draft guidance "NPDES Permit Limitations for Discharge of Contaminated Groundwater: Guidance Document", and the San Francisco Bay Regional Water Quality Control Board Internal Memorandum dated February 16, 1990, "Proposed NPDES Permit Limits For Common Organic Pollutants Found at Service Stations and Other Groundwater Cleanup Sites."

15. The discharge of extracted treated groundwater to surface waters from sites subject to cleanup may contain metals at concentrations that exceed the shallow water effluent limitations. The need to minimize the potential for aquatic toxicity due to elevated levels of metals must be balanced against several factors: the total mass loading from these discharges is relatively low; the cost of treatment may be excessive; and, the metals concentrations may be due natural occurrences of these metals in source formations.

CEQA

16. This action is an Order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of the CEQA pursuant to Section 15321, Title 14, CCR.

Notifications

17. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

18. The Board has notified the Discharger and interested agencies and persons of its intent under Division 7 of the California Water Code to prescribe waste discharge Requirements for the discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the dischargers shall cleanup and abate the effects described in the above findings in compliance with Board Order No 89-115, as amended by order No. 90-090, 91-018 and this order as follows:

A. Discharge Prohibitions

1. The discharge of waste or hazardous materials in a manner which will degrade the water quality or adversely affect beneficial uses of the groundwaters or the State is prohibited.

2. The discharge shall be limited to treated groundwater.

3. Neither the treatment nor the discharge of waste shall create pollution, contamination, or nuisance, as defined by Section 13050 of the California Water Code.

B. Effluent Limitation prohibitions

1. Effluent shall not exceed 50,400 gallons per day.

2. The discharge of waste at the storm drain E-1, Figure 2, containing constituents in excess of the following limits is prohibited:

TABLE 1

Constituent	Instantaneous Maximum Limit (μg/l)
VOC's	
1,1,1-Trichloroethane	5.0
Tetrachloroethylene	5.0
Trichloroethylene	5.0
1,1-Dichloroethylene	5.0
1,2-Dichloroethane	0.5
Vinyl Chloride	0.5
1,2-Dichloroethylene isomers	5.0
1,1-Dichloroethane	5.0
1,1,2-Trichloroethane	5.0
Methylene Chloride	5.0
Chloroform	5.0
Total VOCs	10.0[1]
INORGANICS	
Arsenic	20.0
Cadmium	10.0[2]
Chromium (total)	11.0
Copper	20.0[2]
Cyanide	25.0
Lead	5.6[2]
Mercury	1.0
Nickel	7.1[2]
Selenium	5.0
Silver	2.3[2]
Zinc	58.0[2]

[1] Total of analytes detected by USEPA Method 601

[2] or as modified by hardness from Water Quality Objectives for Fresh Waters with Salinities Less Than 5 Parts Per Thousand.

3. The pH of the discharge of waste shall not exceed 8.5 nor be less than 6.5.

4. Toxicity: The survival of rainbow trout in 96-hour bioassay of the effluent for E-1 as discharged, shall be a median of 90% survival and a 90 percentile value of not less than 70%.

C. Receiving Water Limitations

1. The discharge of waste shall not cause the following conditions to exist in waters of the State at any place:

   a. Floating, suspended, or deposited macroscopic particulate matter or foam;

   b. Bottom deposits or aquatic growths;

   c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;

   d. Visible, floating, suspended, or deposited oil or other products of petroleum origin;

   e. Toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.

2. The discharge of waste shall not cause the following limits to be exceeded in waters of the State in any place within one foot of the water surface:

   a. Dissolved oxygen: 5.0 mg/l minimum. The median dissolved oxygen concentration for any three consecutive months shall not be less than 80% of the dissolved oxygen content at saturation.

   b. pH: The pH shall not be depressed below 6.5 nor raised above 8.5, nor caused to vary from normal ambient pH levels by more than 0.5 units.

   c. Un-ionized ammonia: 0.025 mg/l (as N) Annual Median; 0.400 mg/l (as N) Maximum

3. This discharge shall not cause a violation of any applicable water quality standard for receiving waters adopted by the Board or the State Water Resources Control Board as required by the Federal Clean Water Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Federal Clean Water Act or amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

D. Provisions

1. Planning, permitting, construction, start up and troubleshooting of the proposed interim remedial system shall be completed for the site. The schedule for implementation of proposed remedial interim action shall commence upon receipt of a letter from the Board giving approval to proceed the interim remedial action.

   COMPLETION DATE: No later than September 1, 1994

2. The Discharger shall maintain a copy of this order at the project field office so as to be available at all times to project personnel.

3. Technical reports, submitted by the Discharger, in compliance with the Prohibitions, Specifications, and Provisions of this Order shall be submitted to the Board on the schedule specified herein. These reports shall consist of a letter report that includes the following:

   a. A summary of work completed since submittal of the previous report and work projected to be completed by the time of the next report;

   b. Identification of any obstacles which may threaten compliance with the schedule of this Order and what actions are being taken to overcome these obstacles;

4. In the event of non-compliance with any Prohibition, Specification or Provision of this Order, written notification which clarifies the reasons for non-compliance and which proposes specific measures and a schedule to achieve compliance. This written notification shall identify work not completed that was projected for completion, and shall identify the impact of non-compliance on achieving compliance with the remaining requirements of this Order; and,

5. In the first self-monitoring report, an evaluation of the current ground water monitoring system and a proposal for modifications as appropriate.

6. If any hazardous substance is discharged in or on any waters of the state, or discharged and deposited, or probably will be discharged in or on any waters of the state, the Discharger shall

   a. Report such discharge to the following:

      (1) This Regional Board at (510) 286-1255 on weekdays during office hours from 8 a.m. to 5 p.m.; and,
      (2) The Office of Emergency Services at (800) 852-7550.

   b. A written report shall be filed with the Regional Board within five working days and shall contain information relative to the following:

      (1) The nature of waste or pollutant;
      (2) The quantity involved and the duration of incident;
      (3) The cause of spill;
      (4) The estimated size of affected area;
      (5) The corrective measures that have been taken or planned, and a schedule of these measures; and,
      (6) The persons/agencies notified.

7. If the Discharger is delayed, interrupted or prevented from meeting one or more of the completion dates specified in this Order, the Discharger shall promptly notify the Executive Officer and the Board shall consider revision to this Order.

8. The Board considers the property owner and site operator to have a continuing responsibility for correcting any problems within their reasonable control which arise in the future as a result of this waste discharge or water applied to this property during subsequent use of the land for other purposes.

9. These requirements do not authorize the commission of any act causing injury to the property of another or of the public, do not convey any property rights, do not remove liability under federal, state or local laws, and do not authorize the discharge of waste without the appropriate federal, state or local permits, authorizations, or determinations.

10. The discharger shall comply with the Self-Monitoring Program as adopted by the Board and as may be amended by the Executive Officer.

11. The discharger shall comply with all sections of this order immediately upon adoption by the Board.

12. The discharger shall also notify the Regional Board if the self-monitoring program results indicate, or if any discharge activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit.

13. This Order includes all items of the attached "Standard Provisions and Reporting Requirements" dated December 1986 except A.10, B.2, B.3, C.8, and C.11.

14. Any noncompliance with a requirement of this Order shall be reported as stated in section C.10 of the "Standard Provisions and Reporting Requirements" referred to in C.4. above.

15. This permit may be modified prior to the expiration date to include effluent limitations for toxic constituents determined to be present in significant amounts in the discharge through a more comprehensive monitoring program included as part of this order.

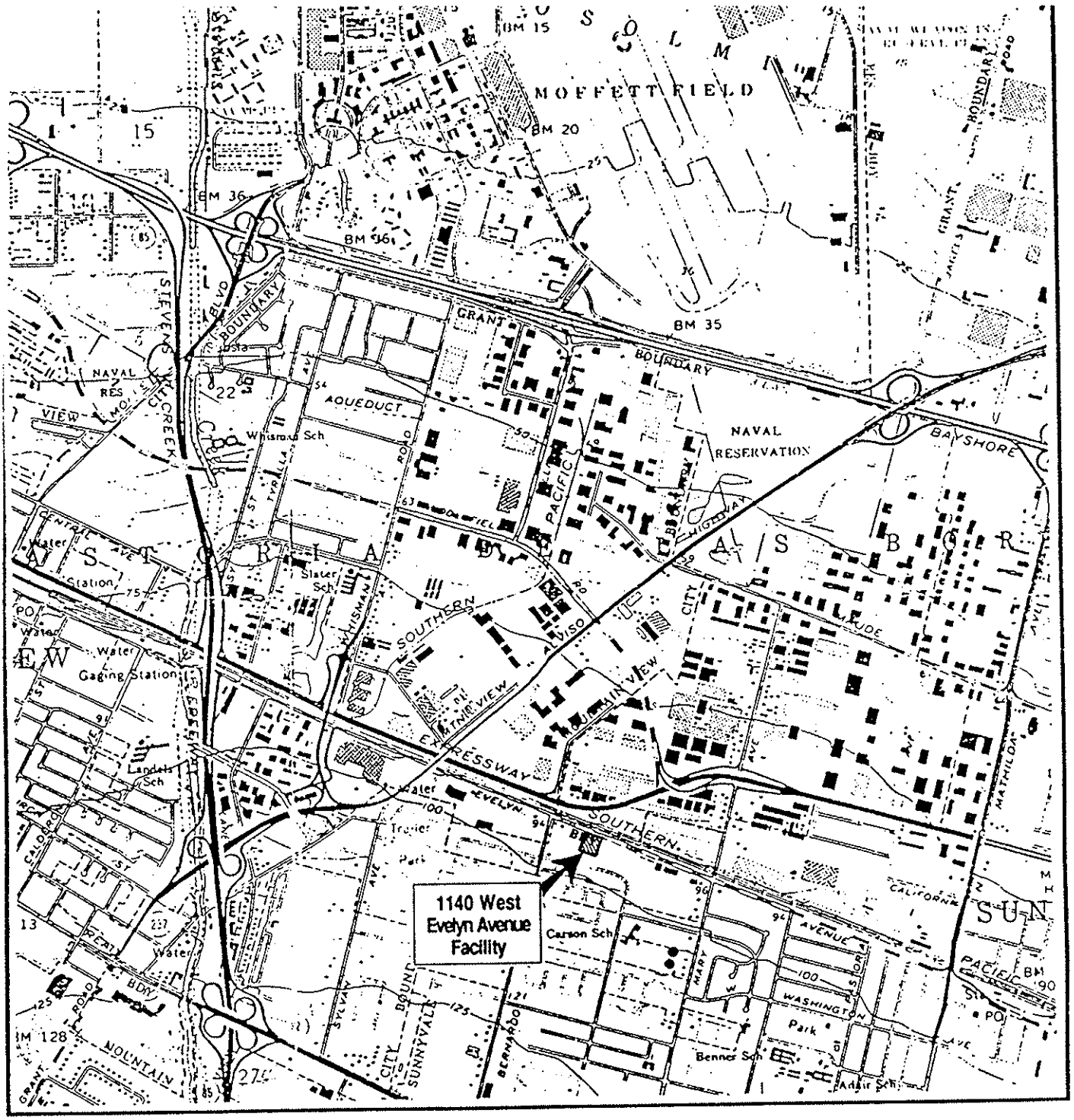
16. This Order expires December 15, 1998. The discharger must file a report of Waste Discharge in accordance with Title 23, Division 3, Chapter 9 of the California Code of Regulations no later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements.

17. This Order shall serve as a National Pollutant Discharge Elimination System permit pursuant to Section 402 of the Federal Clean Water Act, or amendments thereto, and shall become effective at the end of ten days from date of hearing provided the Regional Administrator, U. S. Environmental Protection Agency, has no objection. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

I, Steven R. Ritchie, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region on December 15, 1993.

Steven R. Ritchie
Executive Officer

Attachments:
Figure 1: Site Location Map
Figure 2: Site Plan, Well Location Map
Statement of Basis
Self Monitoring Program
Standard Provisions and Reporting Requirements - December 17, 1986
Self-Monitoring Program, Part A - December 1986, Mod. SBTD 1/23/87



MAP SOURCE:
U.S.G.S. Mountain View, California
15' Quadrangle

Figure 1: REGIONAL MAP

Project No. 1552.01

LEVINE • FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

CHO25AUG89em

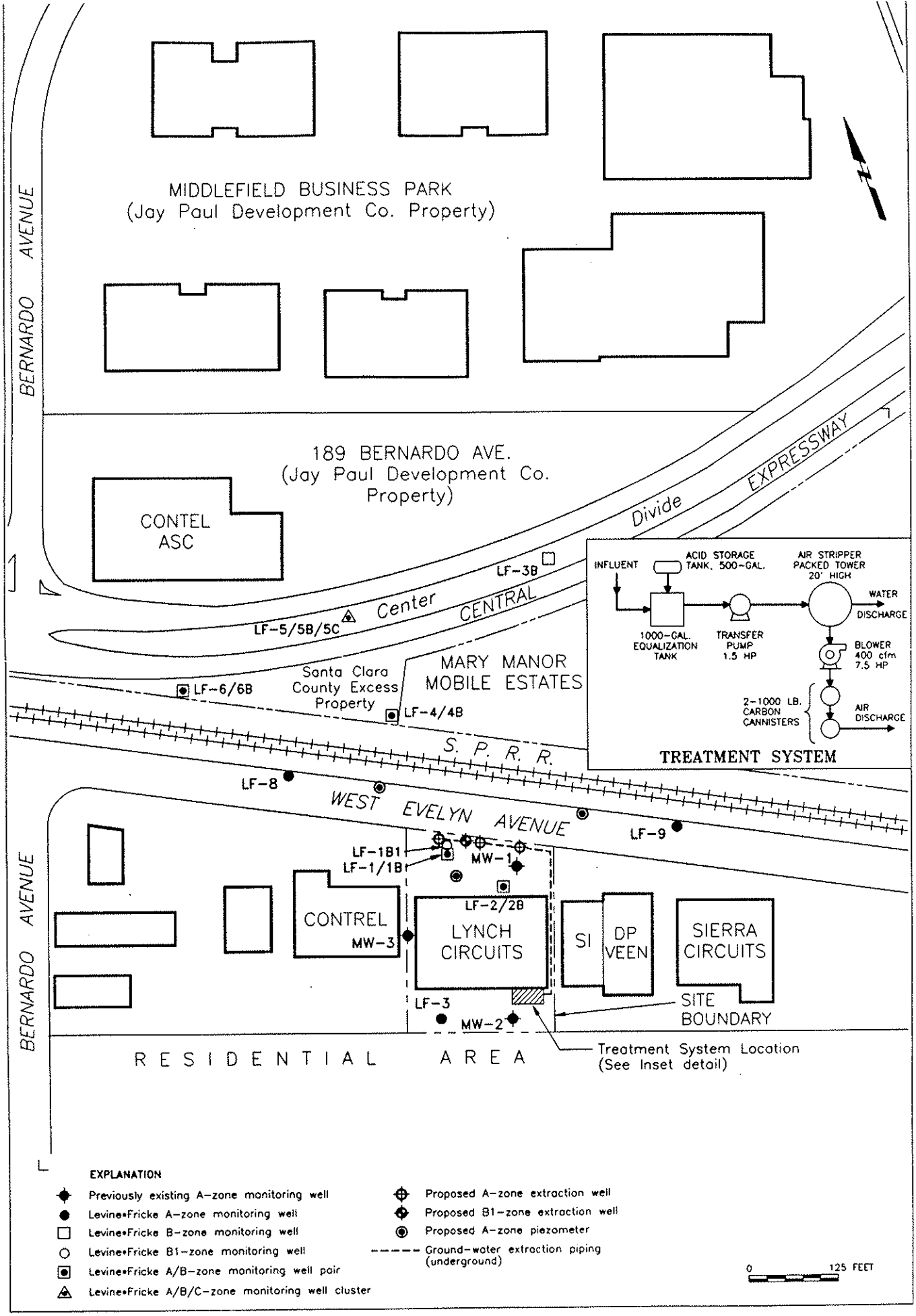


Figure 2 : PROPOSED GROUND-WATER EXTRACTION AND TREATMENT SYSTEM LOCATION

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION
2101 WEBSTER STREET, SUITE 500
OAKLAND, CALIFORNIA 94612

STATEMENT OF BASIS

WASTE DISCHARGE REQUIREMENTS
TO DISCHARGE TO STATE WATERS
NPDES PERMIT NO. CA 0029971

Lynch Circuits, Inc.
and
Siliconix, Inc.
1140 West Evelyn Avenue Facility
Sunnyvale
Santa Clara County

I. Facility Description and Discharge Location

The Building at 1140 West Evelyn Avenue has a residential area to the south, on the east and west are small light industrial manufacturing facilities. Across Evelyn Avenue to the North are rail road tracks. Beyond the rail road tracks to the nort east is Mary Manor Mobile Estates. To the north west and also adjacent to northern boarder of the Mary Manor Mobile Estates is the Central Expressway. Ground water movement is to the north towards the expressway.

A soil gas survey was performed at the Site in May 1989. The highest VOCs detected were beneath the building. Soil sampling results indicate concentrations generally increased with depth, the highest concentratins occurred in a sand unit encountered between 30 and 40 feet below ground surface. Results of ground water monitoring show VOCs at the highest value north of the building, and on the site.

The approved remedial action is to remove VOCs from soil to prevent further migration into ground water. The VOCs in ground water will be reduced to prevent migration into the deeper aquifer.

II. Basin Plan Beneficial Uses

The existing and potential beneficial uses of the surface water adjacent to and contiguous with the West Channel of the Santa Clara Flood Control Channel and South San Francisco Bay include:

a. Contact and non-contact water recreation

b. Wildlife habitat
c. Preservation of rare and endangered species
d. Estuarine habitat
e. Navigation
f. Ocean commercial and sport fishing
g. Shellfish

III. Discharge Description

Estimates of the flow from the extraction systems, as determined by use of ground water modeling, are approximately 20 gallons per minute (gpm).

Based on best professional judgement Regional Board staff believe that this discharge will not adversely affect the quality of State waters. This judgement is based on the low concentrations of chemicals that are expected to be in the treated groundwater, which will meet drinking water standards (see Effluent Limits below), and for fresh surface waters with salinities less than 5 parts per thousand.

IV. Basis for Tentative Waste Discharge Requirement's Discharge Limitations

The proposed effluent and receiving water limitations are based on the Regional Board's "Guidance Document for Discharge of Polluted Groundwater to Surface Waters, September 1985", the California Inland Surface Waters Plan adopted by the State Water Resources Control Borad in April 1991, EPA Region IX "NPDES Permit Limitations for Discharge of Contaminated Groundwater: Guidance Document" dated July 1986, best professional judgement (BPJ), EPA MCLs for drinking water, EPA National Ambient Water Quality Criteria (AAL), one-in-a-million incremental cancer risk levels, California EPA State Action Levels (SAL) and analytical detection limits (DL). These limitations are considered to be best available treatment, which is economically feasible. These limitations will protect beneficial uses of Guadalupe River, contiguous surface water resources, and South San Francisco Bay. Specific limits and basis for the limitation are given in Table 1.

V. Effluent limitations of this Order (as shown in Table III-B2 below) are based on the Basin Plan, and amendments adopted to the Basin Plan in September 1992 which were approved by the State Board in April, 1993, State and U.S. Environmental Protection Agency (EPA) plans and policies, best available treatment economically available (BATEA), and best professional judgement. Also considered in the determination of effluent limits were the EPA Region IX draft guidance "NPDES Permit Limitations for Discharge of Contaminated Groundwater: Guidance Document", and the San Francisco Bay Regional Water Quality Control Board Internal Memorandum dated February 16, 1990, "Proposed NPDES Permit Limits For Common Organic Pollutants Found at Service Stations and Other Groundwater Cleanup Sites."

Section 301(b)(2) of the Clean Water Act calls for effluent limitations that require the application of best available treatment economically achievable (BAT). This treatment technology includes air stripping, carbon adsorption, and other technologies capable of producing effluent of similar quality. For practically all groundwater polluted with organic chemicals, this technology can routinely reduce contaminant concentrations to below method detection limits. In producing EPA's draft "NPDES Permit Limitations for Discharge of Contaminated Groundwater Guidance Document" the Office of Drinking Water carried out substantial review of groundwater treatment technologies and their costs. Results of this review indicate that VOC BAT limits in the NPDES permits can be set at a level consistent with technology based MCLs.

VI. Table III-2B states Proposed Effluent Limitations for Shallow Water Discharges to Freshwater, adopted in the Basin Plan Update for 1993. The discharge of groundwater to surface waters from sites subject to cleanup may contain metals at concentrations that exceed the shallow water effluent limitations. The need to minimize the potential for aquatic toxicity due to elevated levels of metals must be balanced against several factors: the total mass loading from these discharges is relatively low; the cost of treatment may be excessive; and, the metals concentrations may be due either to pollution or uncontrollable natural occurrences of these metals in source formations.

TABLE III-2B (from Basin Plan as modified by hardness)
WATER QUALITY OBJECTIVES FOR FRESH SURFACE WATERS WITH SALINITIES LESS THAN 5 PARTS PER THOUSAND

Constituent	Unit	4-Day Average	Daily Average	1-Hour Average	Instantaneous Maximum
arsenic	µg/l	190	--	360	--
cadmium[b]	µg/l	7.82	--	62.9	--
chlordane*	ng/l	--	4.3	--	--
chromium (VI)[a]	µg/l	11	--	16	--
copper[c]	µg/l	96.7	--	180	--
cyanide	µg/l	5.2	--	22	--
DDT*	ng/l	--	1.0	--	--
dieldrin	ng/l	--	1.9	--	--
endosulfan*	ng/l	--	56	--	220
endrin*	ng/l	--	2.3	--	180
heptachlor	ng/l	--	3.8	--	--
hexachlorocyclohexane-gamma	ng/l	--	80	--	--
lead[d]	µg/l	72.9	--	1870	--
mercury	µg/l	--	--	2.4	--
nickel[e]	µg/l	1263.3	--	11364	--
PCBs*	ng/l	--	14	--	--
pentachlorophenol[h]	µg/l	13	--	20	--
selenium	µg/l	5.0	--	20	--
silver[f]	µg/l	--	--	--	279.2
toxaphene	ng/l	0.2	--	730	--
tributyltin	ng/l	20[i]	40	--	60
zinc[g]	µg/l	851.8	--	940	--

* = See Appendix 1 in the California Enclosed Bays and Estuaries Plan for definition of this term.
a = This objective may be met as total chromium.
i = Six-Month Median.

The shallow water freshwater objectives for cadmium, copper, lead, nickel, silver and zinc are expressed by the following formulas. First determine hardness. Compute it from the results of separate determinations of calcium and magnesium with the following formula: Hardness, mg equivalent $CaCO_3$/l = 2.497 [Ca, mg/l] + 4.118 [Mg, mg/l]. If calcium is 299 mg/l and magnesium is 103 mg/l, then the hardness is 1171 mg/l as $CaCO_3$. From this calculate H where H = ln (hardness) in mg/l as $CaCO_3$. Taking the natural log of 1171 gives a value of H of 7.065. Use this value of H in the following formulas.

b = 4-day average cadmium = $e^{0.7852H - 3.490} = e^{5.547 - 3.490} = 7.82$ µg/l; 1-hour average = $e^{1.128H - 3.828} = 62.9$ µg/l.
c = 4-day average copper = $e^{0.8545H - 1.465} = e^{6.037 - 1.465} = 96.7$ µg/l; 1-hour average = $e^{0.9422H - 1.464} = 180.0$ µg/l.
d = 4-day average lead = $e^{1.273H - 4.705} = e^{8.994 - 4.705} = 72.9$ µg/l; 1-hour average = $e^{1.273H - 1.460} = 1870$ µg/l.
e = 4-day average nickel = $e^{0.846H + 1.1645} = e^{5.977 + 1.1645} = 1263.3$ µg/l; 1-hour average = $e^{0.846H + 3.3612} = 11364$ µg/l
f = Instantaneous Maximum silver = $e^{1.72H - 6.52} = e^{12.15 - 6.52} = 279.2$ µg/l.
g = 4-day average zinc = $e^{0.8473H + 0.7614} = e^{5.986 + .7614} = 851.8$ µg/l; 1-hour average = $e^{0.8473H + 0.8604} = 940$ µg/l
h = The 4-day average objective for pentachlorophenol is $e^{1.005(pH) - 5.290}$. This is 13 µg/l at pH = 7.8.
The 1-hour average objective for pentachlorophenol is $e^{1.005(pH) - 4.830}$. This is 20 µg/l at pH = 7.8.
Pentachlorophenol is determined with a pH of 7.8.

VII. Prohibitions and Provisions

The tentative Waste Discharge Requirements would grant exceptions to two basin Plan prohibitions of the discharge of waste containing "characteristics of concern to beneficial uses" (1) to any point below the Dumbarton Bridge and (2) to any points where less than a 10:1 initial dilution is achieved. The Basin Plan allows for exceptions to these prohibitions when it can be demonstrated that net environmental benefit can be derived and resulting receiving water concentrations will be so low as to be unlikely to affect beneficial uses. Groundwater extraction and treatment is considered an exception by the Basin Plan. Based on current information and five years of monitoring data, the effluent concentrations for this discharge should not affect beneficial uses of the receiving waters and a net benefit is achieved, since this effluent results from groundwater pollution cleanup.

A third Basin Plan prohibition, the prohibition against discharge of toxicants above levels achievable in a program acceptable to the Board, is considered to be satisfied by provision of treatment to meet the effluent limits of this permit. At this time, direct disposal to a POTW for additional treatment is not feasible due to local restrictions on the discharge of groundwater to the POTW.

The tentative Waste Discharge Requirements contain standard provisions which are placed in all NPDES permits issued by the Regional Board. These provisions require compliance with a Self-Monitoring Program and set the permit expiration date. The Self-Monitoring Program will initially be adopted by the Regional Board, but will be subject to revision by the Executive Officer, as needed. The tentative Waste Discharge Requirements include limits for specific effluent constituents, as detailed above.

TABLE 1

Constituent	Instantaneous Maximum Limit (μg/l)
VOC's	
1,1,1-Trichloroethane	5.0
Tetrachloroethylene	5.0
Trichloroethylene	5.0
1,1-Dichloroethylene	5.0
1,2-Dichloroethane	0.5
Vinyl Chloride	0.5
1,2-Dichloroethylene isomers	5.0
1,1-Dichloroethane	5.0
1,1,2-Trichloroethane	5.0
Methylene Chloride	5.0
Chloroform	5.0
Total VOCs	10.0[1]

[1] Total of analytes detected by USEPA Method 601

INORGANICS	
Arsenic	20.0
Cadmium	10.0[1]
Chromium (total)	11.0
Copper	20.0[1]
Cyanide	25.0
Lead	5.6[1]
Mercury	1.0
Nickel	7.1[1]
Selenium	5.0
Silver	2.3[1]
Zinc	58.0[1]

[1] or as modified by hardness from Water Quality Objectives for Fresh Waters with Salinities Less Than 5 Parts Per Thousand.

A. The pH of the discharge of waste shall not exceed 8.5 nor be less than 6.5.

B. Toxicity: The survival of rainbow trout in 96-hour bioassay of the effluent for E-1 as discharged, shall be a median of 90% survival and a 90 percentile value of not less than 70%.

VIII. Expiration Date

This Order expires December 15, 1998.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM

FOR

LYNCH CIRCUITS, INC AND SILICONIX, INC.
1140 WEST EVELYN AVENUE FACILITY
SUNNYVALE, SANTA CLARA COUNTY

NPDES NO. CA 0029971

ORDER NO. 93-158

CONSISTING OF

PART A
(Dated December 1986 and modified January 1987 including Appendices A through E)

and

PART B

PART B

I. DESCRIPTION OF SAMPLING STATIONS

A. INFLUENT

Stations	Description
I-1	At a point in the extraction system immediately prior to inflow to the treatment unit.

B. EFFLUENT

Stations	Description
E-1	At a point in the discharge line immediately following treatment and prior to the effluent reaching the storm drain tributary of the West Channel, tributary to the Santa Clara Flood Control Channel.
R-1	At a point in the West Channel, Santa Clara Flood Control Channel, greater than 100 feet but less than 200 feet downstream from the storm sewer discharge point into the stream.

II. SCHEDULE OF SAMPLING AND ANALYSIS

A. The schedule of sampling and analysis shall be that given in Table A (attached).

III. MISCELLANEOUS REPORTING

If any chemical additives other than the polyphosphate additives are proposed to be used in the treatment of extracted groundwater, it shall be reported thirty (30) days prior to their use and documented in the regular quarterly reports.

IV. MODIFICATION TO PART A

A. Deletions:

Sections D.1.a., D.2.a., D.2.f., D.2.g., D.2.h., D.3., E.1.e., E.3., E.4., E.5., and F.2.b.

B. Modifications:

1. D.2.a. Samples of effluent shall be collected at times coincident (same day) with influent sampling unless otherwise stipulated. The Regional Board or Executive Officer may approve an alternative sampling plan if it is demonstrated that expected operating conditions warrant a deviation from the standard sampling plan.

2. D.2.d If two consecutive samples of any one constituent or parameter monitored on a weekly or monthly basis in a 30 day period exceed the effluent limit or are otherwise out of compliance, or if the required sampling frequency is once per month or less and the sample or parameter exceeds the limit or is otherwise out of compliance, the discharger shall propose correction procedures for acceptance or approval by the Board or Executive Officer, on a case by case basis.

3. D.2.e. Within twenty-four (24) hours of receiving the analytic results indicating a violation of any instantaneous maximum limit, a confirmation sample shall be taken with analytic results known within twenty-four (24) hours. In the case that the same instantaneous limit is violated in the second sample, the discharge shall be terminated until the cause of the violation is found and corrected. Alternative methods of verifying and correcting violations of instantaneous maximum limits may be substituted with the approval of the Executive Officer.

4. F.2.a. Total flow shall be recorded weekly.

5. G.4. Written reports as required under G.4. shall be submitted based on a calendar quarter basis, not later than 30 days following the last day of the quarter.

6. G.4.b. The report format shall be in a form acceptable to the Executive Officer of the Regional Board.

7. G.4.e. The report format shall be in a form acceptable to the Executive Officer of the Regional Board. NPDES Discharge Monitoring Report, EPA Form 3320-1, is provided as guidance.

8. G.5. The annual report shall contain all data required for the fourth quarter in addition to summary data required for annual reporting. This report may be submitted in lieu of the report for the fourth quarter of a calendar year.

I, Steven R. Ritchie, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in the Regional Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Regional Board Order No. 93-XXX.

2. Was adopted by the Board on December 15, 1993

3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the discharger and revisions will be ordered by the Executive Officer or Regional Board.

STEVEN R. RITCHIE
EXECUTIVE OFFICER

Attachment: Table A

TABLE A
SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS

Sampling Station	I-1	E-1	R-1
TYPE OF SAMPLE	G	G	G
Flow Rate (mgd)		W	
BOD, 5-day 20°, or COD (mg/l & kg/day)			
Chlorine Residual & Dosage (mg/l & kg/day)			
Settleable Matter (ml/1-hr. & ft^3/day)			
Total Suspended Matter (mg/l)			
Total Dissolved Solids	Q	Q	Y
Oil and Grease (mg/l & kg/day)			
Bio-assay 96-hr % survival (flow-through or static)		Y	
Ammonia Nitrogen (mg/l & kg/day)		V	
Turbidity (NTU's)			
pH (units)	M	M	Y
Dissolved Oxygen (mg/l and % saturation)			
Temperature (°C)		M	Y
Apparent Color			
Arsenic (µg/l)		Y	Y
Cadmium (µg/l)		Y	Y
Chromium, Total (µg/l)		Y	Y
Copper (µg/l)		Y	Y
Cyanide (µg/l)		Y	Y
Lead (µg/l)		Y	Y
Mercury (µg/l)		Y	Y
Nickel (µg/l)		Y	Y
Selenium (µg/l)		Y	Y
Silver (µg/l)		Y	Y
Zinc (µg/l)		Y	Y

Sampling Station	I-1	E-1	R-1
TYPE OF SAMPLE	G	G	G
EPA 601	Y	M	
EPA 602			
EPA 624[1]	Y	Y	
EPA 625[2]			
EPA 8015 (Modified TPH and Diesel)			

LEGEND FOR TABLE

TYPES OF SAMPLES

G = grab sample
C-24 = 24 hr. composite
Cont. = continuous sampling
DI = depth integrated sample
BS = bottom sediment sample
O = observation

TYPES OF STATIONS

I = intake or influent stations
E = effluent sampling stations
D = discharge point sampling stations
R = receiving water sample stations
L = basin and/or pond levee stations
B = bottom sediment station
G = groundwater station

FREQUENCY OF SAMPLING

E = each occurrence
H = once each hour
D = once each day
W = once each week
M = once each month

Y = once each year

2M/Y = monthly for first 2 months yearly thereafter
M/Y = monthly first year, yearly thereafter
Q/Y = concomitant with other quarterly analysis, yearly thereafter
2M/Q/Y = monthly for first 2 months, quarterly for next 3 quarters, yearly thereafter

2/H = twice per hour
2/W = 2 days per week
5/W = 5 days per week
2/M = 2 days per month
2/y = once in March and once in September
Q = quarterly, once in March, June, September, and December

2H = every 2 hours
2D = every 2 days
2W = every 2 weeks
3M = every 3 months
Cont = continuous

V = varies; analysis for total ammonia nitrogen and unionized ammonia calculated whenever fish bioassay results fail to meet the specified percent survival rate

[1] In lieu of 601 analysis and coincident with 625 analysis

[2] In lieu of 601 analysis and coincident with 624 analysis